SWGDE Guidelines for Capturing Latent Impressions Using a Digital Camera in the Field

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(Note: This document was previously released as SWGIT Section 8 – General Guidelines for Capturing Latent Impressions Using a Digital Camera.)

1. Introduction

The purpose of this document is to describe the proper documentation of latent print evidence by qualified personnel when using a digital camera in the field.

The procedures described in this document are made in accordance with current Scientific Working Group on Friction Ridge Analysis, Study and Technology (SWGFAST) guidance. *SWGFAST Standard for Friction Ridge Digital Imaging (Latent/Tenprint)* [1] and *American National Standard (ANSI) for Information Systems—Data Format for the Interchange of Fingerprint Facial, & Other Biometric Information* [2] both specify 1000 pixels per inch (ppi) at 1:1 as the minimum nominal resolution for latent print evidence.

2. Equipment

It is recommended that a digital camera kit consist of, at a minimum, the following items:

- Professional camera, digital single-lens reflex (SLR) with a minimum eight (8) megapixel native resolution, capable of interchangeable lenses, and manual override for exposure and focus;
- Professional quality fixed focal length macro lens having minimal distortion;
- Detachable flash with a six (6) foot extension cord or a flash with remote capabilities to allow for side lighting;
- Remote shutter release;
- Sturdy tripod capable of various angles and positions;
- Variety of light sources (e.g. floodlights, flashlights, Alternate Light Sources [ALS]);
- Lens filters (e.g. ALS);
- Digital storage media (Note: format the media in the camera prior to each use);
- Flat rigid scales.

2.1 Optional Equipment

The digital camera kit can also include the following optional items:

- Portable computer with appropriate software for viewing images at the scene;
- Appropriate cables and connections;
- Card readers;
- Independent portable hard drives.

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3. Procedure

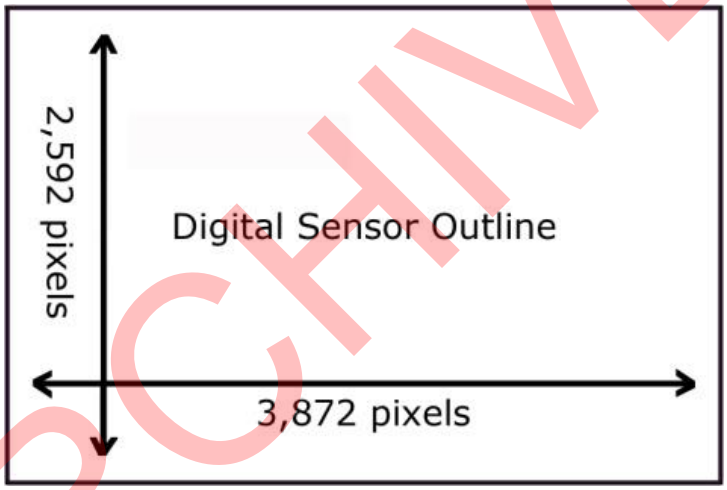
3.1 Step 1: Prior to Initial Use

3.1.1 Determine the maximum field of view in which a minimum of 1000 ppi may be achieved. See *SWGDE Guidelines for the Testing and Capture of Latent Impressions Using a Camera or Scanner* [3].

3.1.1.1 Refer to the effective pixel dimensions of the camera's sensor, as stated by the manufacturer (e.g. 3872x2592 pixels).

3.1.1.2 Divide each dimension by 1000 ppi. In this example, that equals 3.872 inches x 2.592 inches. This makes the maximum field of view approximately 3¾ inches x 2½ inches. To convert inches to millimeters, multiply inches by 25.4. To achieve maximum detail, it is best practice to fill the frame with the impression.

3.1.1.3 Not all camera viewfinders cover 100% of the capture area. Take a test image of scales across the vertical and horizontal axis to determine coverage of viewfinder.



3.1.2 Review Standard Operating Procedures (SOPs) detailing how the equipment is to be used.

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3.2 Step 2: Camera Set Up and Use

3.2.1 Verify camera settings include, but are not limited to: time/date stamps, image file format, and image size. It is recommended to capture using no compression, or lossless compression (e.g. RAW or TIFF). Refer to *SWGDE Digital Image Compression and File Formats Guidelines* [4].

3.2.2 Capture overall view of impression area without a scale, using proper lighting.

3.2.3 Capture overall view of impression area with a scale, using proper lighting.

3.2.4 Mount camera on tripod with camera at a 90-degree angle to the impression.

3.2.5 Light impression; use appropriate light source (e.g. flash, ALS).

3.2.6 Place scale on the same plane and as close as possible to impression without obscuring detail. Do not exceed the maximum field of view established in Step 1. The scale may contain case information based on organizational procedures.

3.2.7 Select appropriate camera settings based on the previous equipment testing.
Note: *Manual mode or aperture priority is recommended.*

3.2.8 Capture impression.

3.2.9 Repeat for each impression.

3.2.10 If the evidence is processed further, re-photograph as appropriate for all latent prints developed.

3.2.11 Images from separate incidents should be clearly delineated by a change of storage media.

3.2.12 As soon as practical, media should be downloaded to an approved storage device and reformatted; refer to *SWGDE Best Practices for Maintaining the Integrity of Imagery* [5].

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3.3 Step 3: Use of Portable Computers/Storage Devices (Optional)

3.3.1 Connect camera or removable media to the device, according to manufacturer's specifications.

3.3.2 When using a computer, create and name a file folder on the computer's hard drive (based on organizational procedures) to receive original image files. Care should be taken not to overwrite existing image files from previously downloaded media. Some cameras reset their file counters whenever media is changed.

3.3.3 Copy all original files to appropriate file folder.

3.3.4 Verify that all images have been copied into the correct file folder.

3.3.5 Take necessary precautions and steps to preclude accidental deletion of files.

3.3.6 Removable media should not be erased in the field; however, if it becomes necessary, redundant copies should be made and verified.

4. References

[1] Scientific Working Group on Friction Ridge Analysis, Study and Technology, "Standard for Friction Ridge Impression Digital Imaging". [Online]. http://www.swgfast.org/Documents.html

[2] ANSI/NIST-ITL 1-2007, "Data Format for the Interchange of Fingerprint, Facial, & Other Biometric Information – Part 1," *NIST Special Publication 500-271*, May 2007. [Online]. https://www.nist.gov/sites/default/files/documents/itl/ansi/Approved-Std-20070427-2.pdf

[3] Scientific Working Group on Digital Evidence, "SWGDE Guidelines for the Testing and Capture of Latent Impressions Using a Camera or Scanner,". [Online]. https://www.swgde.org/documents/documents

[4] Scientific Working Group on Digital Evidence, "SWGDE Digital Image Compression and File Formats Guidelines,". [Online]. https://www.swgde.org/documents/documents

[5] Scientific Working Group on Digital Evidence, "SWGDE Best Practices for Maintaining the Integrity of Imagery,". [Online]. https://www.swgde.org/documents

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History

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